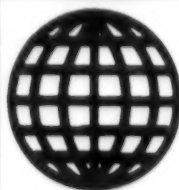


JPRS-TEN-93-022  
3 September 1993



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# ***JPRS Report***

# **Environmental Issues**

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# Environmental Issues

JPRS-TEN-93-022

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## SOUTH AFRICA

### Consultant Notes New 'Tough' Environmental Legislation

MB0508072593 Johannesburg SAPA in English  
2214 GMT 4 Aug 93

[Text] Johannesburg Aug 4 SAPA—The South African mining industry was warned on Wednesday tough new environmental legislation was planned.

The onus of proof would soon be on mining houses in cases where it was alleged that mining and prospecting operations were harming the environment. The plaintiffs in such matters would no longer have to prove their cases. Mining and prospecting houses found to be at fault in the protection of the environment could face penalties as severe as, in cases of blatant disregard of legislation, compulsory liquidation.

This warning was sounded by Environmental Consultant John Waters who told the second annual Environmental Management in Mining Conference in Midrand near Johannesburg that the impending legislation was a follow up to the Minerals Act of 1991.

Until now not generally publicised, the act already requires any person or company wishing to mine or

prospect, and those already so engaged, to submit acceptable programmes to the Department of Mineral and Energy Affairs.

The programmes must show how the environment would be and was protected during the operations as well as plans for the rehabilitation of the working areas when they were closed.

Should a programme not be accepted, new operations would not be allowed to go ahead and existing ones had to alter their mining plans to conform to acceptable standards.

Andrew Brown of the Ministry of Water Affairs, which is closely involved with mineral and energy affairs in evaluating the environmental programmes, also warned delegates that the authorisation of existing projects would by no means be guaranteed.

"You will have to make a commitment to the environment," Mr. Brown said.

"This is not just a paper exercise. Approval will not depend on the amount of paper you submit. Your objectives must be clearly stated and progress be measurable in both quality and quantity."

A ministerial announcement was expected soon to clarify the position, he said.

### **Twenty-Fourth South Pacific Forum Focuses on Environment**

*OW1008092193 Beijing XINHUA in English  
0858 GMT 10 Aug 93*

[Text] Nauru, August 10 (XINHUA)—Environmental protection, including the nuclear issue, dominated the first-day session of the 24th South-Pacific Forum meeting today.

Heads of the 15 forum member nations urged all nuclear powers in the world to negotiate a comprehensive test ban treaty so that the suspension, especially of French testing in the region, becomes permanent.

Fiji Prime Minister Sitiveni Rabuka, who assumes the spokesman of the forum meetings, told a press conference after today's session, that the forum member countries also agreed on the need to prevent further proliferation of nuclear weapons and to continue strong opposition to dumping of radioactive waste at sea.

The discussions also noted the importance of establishing a comprehensive and inclusive legal regime for nuclear liability, including an enhanced regime to cover transboundary damage from peaceful nuclear activity, Rabuka said.

Also discussed at today's sessions were management of hazardous wastes, coastal protection and the climate change and sea level rise, which are vital to the island nations.

Today's environment topic was reinforced by New Zealand and Micronesia's signing of the South Pacific Regional Environment Program (SPREP) which so far has been signed by 14 countries. SPREP is an autonomous organization in the region on environment concerns.

### **First Market for Environmental Protection Products Opens**

*OW0908055293 Beijing XINHUA in English  
0301 GMT 9 Aug 93*

[Text] Beijing, August 9 (XINHUA)—China has opened its first market for environmental protection products in the economic and technological development zone of Ningbo, a port city in east China's Zhejiang Province.

The establishment of the new market shows the growing competitiveness of the country's environmental protection technology and related products.

Xie Zhenhua, director of the State Environmental Protection Bureau, says that the setting up of such a market is an important way to link scientific research and design in environmental protection areas with technological development and related applications in production, as well as acting as an important channel for Chinese and foreign technology and products involving environmental protection.

He believes that the market, which was jointly sponsored by several units including the China Industrial Association of Environmental Protection, will be of great significance for the technical progress, production and circulation of the country's environmental protection industry.

According to today's "PEOPLE'S DAILY," there are more than 4,000 enterprises across the country engaged in the environmental protection industry, which began to emerge in the early 1970s. These enterprises, with fixed assets of three billion yuan, create six billion yuan of output value each year.

Products turned out by the above enterprises have been widely used in fields such as the treatment of pollution, environmental monitoring and comprehensive use of resources. So far, China has completed more than 20,000 pollution control projects.

An increasing number of technological achievements for environmental protection have also found their way onto the world market.

### **Environmental Protection Committee Formed; Officials Cited**

*OW3007104193 Beijing XINHUA Domestic Service  
in Chinese 1029 GMT 14 Jul 93*

[By reporter Zhu Youdi (2612 1635 2769)]

[Text] Beijing, 14 Jul (XINHUA)—The Third State Council Environmental Protection Committee was formed today. The new committee made appropriate adjustments and upgradings according to the needs of development while retaining the functions of the last committee.

At the first meeting of the Third State Council Environmental Protection Committee, State Councillor Song Jian said: Our country's undertaking in environmental protection was initiated with Premier Zhou Enlai's personal concern and leadership. Twenty years have passed, and the tasks in environmental protection have developed into great global undertakings of concern to the entire nation. This meeting determined the new committee's general rules and regulations, responsibilities, and work system. Currently, our country is in a period of high-speed economic growth. It is our common understanding and the entire people's strong demand to adopt a path of sustained development. We must do a more thorough and painstaking job of environmental protection. We should actively participate in comprehensive decisionmaking in matters concerning the environment and development, further amend and perfect various relevant environmental protection laws and regulations, as well as organize, inspect, and promote environmental protection nationwide. We should push China's undertakings in environmental protection further forward during the term of this committee.

At the meeting, Xie Zhenhua, director of the State Environmental Protection Bureau, said: The 10 principal measures approved by the party Central Committee and the State Council for dealing with matters concerning our country's environment and development clearly point out that to implement the strategy of sustained development, it is necessary to establish a mechanism for the participation in comprehensive decisionmaking in the environment and development and to grant the State Council Environmental Protection Committee and the State Environmental Protection Bureau responsibility in comprehensive decisionmaking. Otherwise, it would be difficult to reflect well the principle of "The economy is dependent on the market and environmental protection is dependent on the government." Therefore, the new term of the State Council Environmental Protection Committee, while retaining the original functions, has added new functions—that is, it will assist the State Council in deliberating economic development policies, programs, and major economic development plans that bear a major influence on the environment as well as on establishing an essential work system. This is to ensure that the State Council Environmental Protection Committee is capable of examining and coordinating environmental protection policies and measures as well as formulating relevant economic and technological policies on the environment and development. Further, this also enables the committee to examine major economic policies, programs, and major economic development plans that may affect the environment, so as to ensure not only that environmental protection policies are examined from the angle of economic development, but also that economic development policies are examined from the angle of environmental protection. Only when we accomplish this can we truly participate in comprehensive decisionmaking and promote the coordinated development of the environment and the economy.

The first meeting of the Third State Council Environmental Protection Committee also approved the "Action Plan for the Nationwide Investigation of the Enforcement of Laws on Environmental Protection." The action plan calls for conducting inspections, in the next three years starting during this year, on the enforcement of the environmental protection law, the air pollution prevention law, the water pollution prevention law, and the wild animal protection law as well as relevant State Council regulations on environmental management. It is aimed at strengthening, through inspections, the supervision of the enforcement of environmental laws and putting an end to the situation wherein laws are not fully observed and strictly enforced, or actions are not taken against those who violate the laws. It is also aimed at strengthening the people's role in participation and supervision, cracking down strictly on criminal activities, and ensuring the proper implementation of all laws and regulations concerning environmental protection and wild animal protection.

### **Pollution Eroding National Treasure in Shanxi**

OW2408110993 Beijing XINHUA in English  
1039 GMT 24 Aug 93

[Text] Taiyuan, August 24 (XINHUA)—Chinese artists and workers are battling to save the 1,500-year-old Buddhist statues now being seriously eroded by weathering and acid rains in the Yungang Grottoes in north China's Shanxi Province.

Yungang Grottoes near Datong, in the coal producing Shanxi Province, date back to the 5th century A.D. The more than one thousand grottoes hollowed out of the cliffs, stretch for about one kilometer from east to west. Fifty-three of them, containing over 51,000 statues, remain till this day. The largest image of Buddha is 15.5 meters tall set in a grotto measuring 21.3 meters wide and 15.5 meter deep. The Buddha is seated on a pedestal measuring 15.5 meters across and is surrounded by four smaller Buddhas. The smallest is only five inches. Pedestal, columns and walls are richly carved. Almost all the grottoes are decorated with bas-reliefs of flying angels supple and gracefully conceived and exquisitely carved.

Shrine halls, platforms, pavilions, hanging verandas in classical Chinese architectural style and the numerous alcoves built around the main cellars combine to make the Yungang Grottoes one of the gems of China's ancient civilization.

However, due to years of weathering, the Buddhist statues are being seriously defaced, and the serious pollution caused by modern industries has made the situation worse.

As early as in 1973, when Premier Zhou Enlai accompanied French President Georges Pompidou to the caves, he noticed the erosion and damages to the sculptures, he instructed those in charge to repair the caves to preserve these works of art within three years.

Three years of reinforcement work did not solve the weathering problems. In 1991, the state earmarked five million yuan for the protection of the caves. The provincial government and Datong city also appropriated another five million yuan for the protection projects aimed to control the erosion by water filtering through the stones from both above and underground and from rains.

But the protection work is still being hampered by the shortage of funds and the worsening environmental pollution in the area.

It was estimated that the completion of the whole protection work will cost 50 million yuan and the funds appropriated by the government are far from enough.

Another headache is the control of air pollution in the area which often results in acid rain extremely harmful to the already battered Buddhist statues.

"The residents and companies around the Yungang Grottoes burn coal for heating and cooking and the tall chimneys of factories and institutions around are emitting black soots," said an expert. "Up to 10,000 coal-laden trucks passing daily on the highway about 30 meters away from the grottoes leave clouds of dust and shed a large amount of coal, making the air in the surroundings even unbearable."

Experts call for the use of coal gas instead of the use of traditional coal cakes.

In addition, they advise the government to promptly construct central heating systems in the area in order to control air pollution, and remove enterprises and government institutions in the vicinity.



## INDONESIA

### Government Undertakes Ozone Layer Protection Program

BK3107085493 Jakarta THE INDONESIA TIMES  
in English 17 Jul 93 p 8

[Text] Jakarta—Indonesia will spend 360 million dollars for ozone layer protection program in five-year term, the National Committee for Ozone Layer Protection said.

The amount will be used for a study on the preparation of the substitution industry of technology for non-ozone depleting substances, particularly used in air conditioning and refrigerators, Chairman of Technical Team for Ozone Layer Protection Dr. R.T.M. Sutamiharja said here Friday.

He said Indonesia will spend 72 million dollars yearly in a five-year reduction term for the substances consumption.

According to Sutamiharja, the world's consumption of ozone-depleting substances such as chlorofluorocarbon (CFC), halon, carbon tetra chlorida, and methyl bromide reached 3,838.9 tonnes last year.

"Some world bodies such as the United Nations Environmental Programme (UNEP) and the World Bank will provide some money for the reduction program," he added.

The National Committee for Ozone Layer Protection consists of governmental agents, domestic and overseas scientific institutions, and nongovernmental organizations.

The committee struggles for the developing countries' rights, particularly Indonesia in the global environmental issues.

Sutamiharja said the consumption of the ozone-depleting substances in mostly developing countries such as Indonesia less than 0.3 percent yearly per capita. So that the developing countries have a 10-year interval to reduce the consumption of the substances.

Based on data from the Industrial Ministry, Indonesia's consumption of the ozone-depleting substances in the period of 1987-1989 far less than 0.3 percent yearly per capita that is around 0.2 kilograms yearly per capita.

The consumption level, however, has increased in line with the increasing need of goods such as refrigerators, air conditioning, cosmetics, and foams.

The Indonesian Statistical Bureau (BPS) said Indonesia imports ozone-depleting substances from Britain, United States, Japan, and France. The import volume of the substances in the period of 1984-1990 increased by 16.6 percent.

### Parliament Calls for Solution to Imported Industrial Waste

BK0708025493 Jakarta Radio Republik Indonesia  
Network in Indonesian 0000 GMT 7 Aug 93

[Text] The House of Representatives has asked the government to seriously cope with the problem of industrial waste sent from overseas because of its enormous social and economic impact on low-income people. Alief Meilana, vice chairman of the House's Commission X [Roman numeral ten], disclosed this to reporters in Jakarta yesterday, adding that it costs between \$160 and \$1,000 to process one tonne of poisonous industrial waste.

The dispatch of industrial waste into the country is also illegal as it is against the Health Ministry's Regulation No. 453/1983. The dumping of industrial waste in the ports has also caused a drastic drop in the income of scavengers whose daily income has dropped from 7,500 rupiah to 3,000 rupiah. Presently, many containers of poisonous industrial waste can still be found in the ports of Tanjung Priuk, Tanjung Perak, and Belawan.

## JAPAN

### International Legislators To Meet in Tokyo on Environment

OW2408085593 Tokyo KYODO in English 0828 GMT  
24 Aug 93

[Text] Tokyo, Aug. 24 KYODO—More than 40 legislators from Europe, the United States, Russia and Japan will gather in Tokyo for three days from Monday [30 August] to coordinate environmental legislation in their countries, Japanese lawmakers said Tuesday.

The legislators, members of the Global Legislators Organization for a Balanced Environment (GLOBE), will meet at the Diet building to debate an agenda which includes climate change, biodiversity and the role of international institutions in preserving the environment.

The Seventh GLOBE International General Assembly will bring together nine legislators from the European Parliament, nine from the U.S. Congress, six from the Russian parliament and more than 20 from the Japanese Diet.

It will be the second GLOBE general assembly in Japan.

Announcing the assembly, GLOBE International President Takashi Kosugi said that members, though few in number, are able to use the biannual assembly gatherings to exchange information about progress in environmental legislation in their respective countries.

Kosugi, a House of Representatives member from the Liberal Democratic Party, said that since the assembly comes just over a year after the June, 1992 United Nations-sponsored Earth Summit in Rio de Janeiro,



members will use the opportunity to assess progress in achieving the summit's aims.

The organization has four members in the new coalition cabinet of Prime Minister Morihiro Hosokawa, including Chief Cabinet Secretary Masayoshi Takemura, Economic Planning Agency Director General Manae Kubota, Science and Technology Director General Satoshi Eda, and Environment Agency Director General Wakako Hironaka.

#### **Environment Agency To Take Action To Prevent Red Tide**

*OW2608101193 Tokyo KYODO in English 0939 GMT 26 Aug 93*

[Text] Tokyo, 26 Aug. KYODO—The Environment Agency will create guidelines limiting the amount of effluent from factories and sewage disposal plants in an attempt to halt fish kills in bays and inland seas, agency officials said Thursday [26 August].

The guidelines will control the volume of nitrogen and phosphorus, now being dumped into Tokyo Bay, Seto inland sea in western Japan and 86 other inland seas and bays insulated from ocean waters, the officials said.

The two elements in question contribute greatly to "red tides," a condition where tiny phytoplankton multiply quickly on the water's surface. The water will usually appear reddish-brown and the supply of oxygen available for sea creatures is diminished, generally leading to large fish kills in infected areas.

In many western countries, the ceiling for nitrogen in effluent is less than 120 milligrams per liter and phosphorus is limited to less than 16 milligrams per liter, the officials said.

Japan has no set ceilings.

The agency will draft separate comprehensive guidelines for each of the 88 bays and seas in order to improve the quality of the water.

The agency guidelines will take effect October 1, the officials said.

The guidelines on effluent will apply to about 20,000 factories and sewage disposal plants dumping more than 50 tons of effluent into bays and seas, the officials said.

About 2,000 of the facilities must meet the effluent standard by five years after the guidelines take effect.

## **THAILAND**

#### **Toxic Waste Dump Linked to Water Pollution; Protest Likely**

*BK0908012993 Bangkok BANGKOK POST in English 9 Aug 93 p 3*

[Text] Kanchanaburi—Banners calling for the Government to solve water pollution problems near a toxic waste dump in Kanchanaburi are likely to be strung up in Muang district today, according to local activists.

They warn that a big rally is probable if their concern is ignored.

Nam Suwannachim, a village headman of Ban Thungna Nangrok, said yesterday that villagers were panicking.

Almost 3,000 people would be at risk if the contamination was definitely caused by the waste because it would enter their underground wells.

The authorities warned that underground water in Ban Wangkum, Ban Thachaeng and Ban Thungna Nangrok is not safe for consumption as the level of lead in the water is beyond acceptable standards.

The villages are located below the dump site of chemical waste removed from Klong Toey [Bangkok port area] in 1991 following a big fire.

The military authorities covered the dump with concrete which develops cracks and holes in the rainy season.

The water drains on to low-lying land and, when it rains, residents worry that the water might wash the chemicals into natural waterways.

Kanchanaburi Governor Nat Siwihok said he would inspect the leaking containers today.

Mr. Nam said the wells were formed by the government several years ago and there had never been a problem until the waste from Klong Toey was buried in the military area.

"Those who use the underground water for bathing develop rashes. Most villagers believe the problem is caused by the buried waste."

"Nobody dares to use the wells," he said.

#### **Forestry Destruction in North Poses 'Major Threat'**

*BK0808013893 Bangkok THE SUNDAY POST in English 8 Aug 93 p 3*

[Text] About 4.5 million rai of fertile forests in the North, especially in the top watershed areas, are destroyed annually by hilltribesmen practising shifting cultivation, according to a Forestry Department report.

Forest destruction in the North has become a major threat to the country's environment and ecosystem

because large-scale watershed areas have been extensively trespassed on by hilltribes people planting opium and other crops the report said.

A hilltribe family cleared about five to six rai of forest land a year through slash and burn methods.

According to the report, about 80,000 hilltribe families totalling 550,000 people live in the North.

It said the most fertile watershed areas known as Class 1A in northern provinces, particularly Chiang Mai, Chiang Rai, Phayao, Mae Hong Son, Tak, Nan and Phetchabun, were depleting at an alarming rate.

The 17 provinces in the North have a combined area of 169,644 square kilometres and about 20 million people.

The region is the watershed area for the Ping, Wang, Yom and Nan rivers which join as the Chao Phraya River in Nakhon Sawan province.

The report was used as a guide in the drafting of measures to protect forests and suppress encroachment in the North under a campaign initiated by Her Majesty the Queen.

Her Majesty last March flew over Chiang Mai's Chai Prakan sub-district by helicopter and noted extensive forest encroachment for shifting cultivation.

She then assigned her Royal Guards to coordinate efforts with forestry officials to inspect the affected areas.

A meeting was called of Chiang Mai authorities, the Third Army Region and the Forestry Department after which a command headquarters was set up to prevent further trespass.

The Third Army Region and the department have since cooperated in cracking down on Chinese Haw trespassing on forests in Chai Prakan sub-district.

They also coordinated efforts with the authorities to suppress encroachment by Burmese illegal workers.

The Third Army Region has asked for about 80 square kilometres of deteriorated land in the sub-district to implement a forest rehabilitation and conservation project similar to the one in Chiang Mai's Omkoi district.

A 1991 survey by the Landsat satellite indicated that Thailand's forests covered only 85.4 million rai or 26.64 percent of the country's total area of 321 million rai.

The national forestry policy stated that Thailand's forestry area should be at least 40 percent of its total land, equivalent to 128 million rai.

The department's report said the rapid increase in the population also contributed to the decrease in forestry areas.

The population rose from 29.3 million in 1961 to 55 million in 1992 and 60 percent lived in rural areas.

The report said 64.9 percent of rural families or about 4.87 million families were in agriculture.

Land farmed by rural people had increased from 65.8 million rai in 1961 to 147.8 million rai in 1988, an average annual increase of three million rai.

The expansion of farmland to increase agricultural output rather than boost productivity per rai has also led to extensive trespass on the forests, the report said.

## CZECH REPUBLIC

### Agreement on Protection of Oder River Almost Ready

AU2408103593 Prague CTK in English 1951 GMT  
20 Aug 93

[Text] Prague, August 20 (CTK)—Environment ministers from the Czech Republic, Poland and Germany will sign an agreement on the environmental protection of the Oder River in Wroclaw, Poland, sometime this fall.

This was decided today in Prague by the Czech Minister for the Environment Frantisek Benda, the German Minister for the Environment, Conservation and Reactor Safety Klaus Topfer, the Polish Deputy Minister for the Environmental Protection, Nature Resources and Forestry Michal Wilczdyski, and the Saxony Environment and Territorial Planning Minister Arnold Vaatz.

At a press conference today, Benda said that the work of experts in preparing the agreement would probably be completed by the end of September. No important problems have arisen during this preparatory phase, he added.

The signatories will declare common responsibility for keeping all of the Oder clean, and consequentially the purity of the Baltic Sea. They will support construction of sewage works and prevention of industrial pollution.

Minister Topfer said that an international secretariat would be established in Wroclaw to coordinate the project.

## HUNGARY

### Soviet Army's Environmental Damage Costs 30 Billion Forints

AU0208164793 Budapest MTI in English 1805 GMT  
30 Jul 93

[Text] Budapest, 30 July (MTI)—“The former Soviet Army did not care about the damage it caused to

Hungary's environment,” North Hungarian Environmental Inspectorate leader Istvan Gavaller said at the former Soviet military airport in Mezokovesd on Friday [30 July].

Opening a demonstration of damage-eliminating technologies, he said the airport was one of the largest Warsaw Treaty air bases under Soviet control. Soil and subsoil water in the vicinity was polluted by thousands of tons of fuel.

Damage revealed by a survey conducted under intergovernmental agreements from March 1990 to 10 June 1991 amounted to 60.2 billion forints (\$1 equals 96 forints), while the Soviets asked 54.1 billion forints for empty buildings and airports. Legal successor Russia renounced the sum after receiving the survey results.

Environmental Management Institute General Director Istvan Endredy said that the 171 Soviet garrisons had employed 110,000 soldiers, used more than 6,000 buildings, and trained on 48,000 hectares. Forty percent of environmental damage affected the soil and underground waters.

He added that until 1995, nearly 30 billion forints would be needed to eliminate all the damage sustained.

## ROMANIA

### Ecological Political Organizations Announce Merger

AU2508172193 Bucharest ROMPRES in English  
1427 GMT 25 Aug 93

[Text] Bucharest ROMPRES, 25 Aug—The spokesman of the Ecological Movement of Romania [MER], Petre Terzi, announced in a news conference on Wednesday the merger of the National Ecological Party [PER] with MER, on the basis of the decisions taken on 13 June 1993, by the congresses of the two parties.

MER President Eduard Victor Gugui stated that the attitude toward the present power was one of reconciliation, even cooperation, in the fields where the movement could offer alternatives for the country's recovery.

## REGIONAL AFFAIRS

### Small States at Conservation Congress Urged To Unify

FL2508211393 Bridgetown CANA in English  
1658 GMT 25 Aug 93

[Text] Kingston, Jamaica, Aug 25, CANA—Head of the University of the West Indies' Centre for Sustainable Development, Prof. Bishnodat Persaud, has called on the world's small states to develop a firmly unified position and plan, before the Global Conference on Sustainable Development of Small Island States in Barbados next April.

He told delegates to the 27th Annual Caribbean Conservation Congress here Tuesday that much more was needed to ensure the success of the Barbados meeting. Persaud regretted that small island states "have not yet developed a strategic technical or diplomatic plan to assist in ensuring success." The challenge, he declared, was to get recognition of the "difficult sustainable development problems" facing most small island states. Small states, he said, would have to rise to "the challenges posed by their inevitably weak position in the international system."

He added: "They have already come together to form the Alliance of Small States (AOSS). They will have to do much more to concert around a strong consensus position before the Barbados meeting... They must make a bold start now." Persaud said that in their negotiations with the developed world, small states would have to point to the "special case for aid, and argue against premature graduation from development assistance."

Noting that the relatively high per capita income of many small states was being seen as a justification for a reduction in development assistance, Persaud said there was need to demonstrate the artificiality of such incomes in many small states.

"Preference in export markets is an important reason for relatively good levels of per capita income. Such protection does not indicate development. Moreover, small states are now facing declining levels of preferences. High levels of aid, remittances, and expatriate incomes are other artificial elements. But most of all, (small states) must point to the high per capita capital and recurrent costs of achieving sustainable development," Persaud said.

The developed world, in considering aid levels, should be made to recognise the problems caused by the absence of "scale economies, which make it difficult to raise capital commercially for vital infrastructure such as airports, ports, and roads," said Persaud. "Even when they have reasonable levels of per capita income, small states find it difficult to raise capital from the major capital markets or even from private investors because of the limited commercial opportunities they offer to investors," he added.

He also stressed the special capital needs arising from environmental problems such as soil erosion, forestry

depletion, and marine pollution. Persaud said that last year's world environment meeting in Rio de Janeiro had achieved very little in terms of action in developing countries in particular.

"...Since much will depend on additional resource provision ... the prospects for dealing with environmental problems in developing countries especially... do not look good," he remarked.

Following Tuesday's closed business session, the open session of the Caribbean Conservation Association Conference begins Wednesday with about 100 delegates from throughout the region in attendance. The conference is focusing on sustainable tourism and human development as well as community involvement in environmental preservation.

## BRAZIL

### New Environmental Satellite Monitoring Program Announced

PY0308224193 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 31 Jul 93 p p4

[Article by Julio Ottoboni]

[Text] Sao Jose dos Campos—The new Brazilian space project that will replace the All-Brazilian Space Mission (MECB) is ready. The National Institute of Space Research (INPE) intends to develop a group of low-altitude environmental satellites this year to observe small areas. The remote sensory system will cover the whole planet and include small, low-cost earth stations.

According to Decio Castilho Ceballos, INPE manager for the new satellites program, this represents a vast opening for Brazil in the space field. "We can disseminate remote sensory use in countries with little resources," he said. This is a new project in the world and has received UN support.

It is being called World Observation Monitoring (WOM) [preceding three words and acronym in English]. It foresees a daily transmission of images and data on the environment to small receiving and processing stations on earth to locate occurrences such as fires and floods. These small stations will receive information in a 100- to 200-km radius at a total cost below \$50,000. "A very low cost compared with the \$10 million a medium-size central receiving station costs," Ceballos said.

### Cooperation

Ceballos stressed the system's convenience. With the WOM the users will receive data and images in real time without intermediation, something that is currently impossible. Ceballos says the image resolution is of good quality and access to it will be possible from any part of

the planet. "This will be essential to increase international cooperation in satellite images."

The institute foresees the construction of 10 100-kg small satellites (eight operational and two as reserves) placed in orbit at an altitude of 640 km. In space, the satellites will be located on two different orbital planes, covering the whole globe. In this system, the passage over the same point will take place every 24.5 minutes, transmitting data to fixed antennas on earth stations.

The INPE estimates that the satellite network may be developed and launched by 1997, with an experimental flight in two years time. The total budget is \$150 million, and part of the resources may come from foreign organizations. "International concern about Brazil's environment is very great," the scientist said.

The INPE soon must call for bids for carrying out technical feasibility studies on the program's digital parts, which will be used in testing the remote sensory satellites currently planned.

## PERU

### Group Created To Defend Environment, Agricultural Areas

P40408202093 Lima Panamericana Television Network in Spanish 1200 GMT 2 Aug 93

[Text] A group to defend the environment and agricultural areas of Lima's Lurin, Rimac, and Chio Valleys has been created. This measure seeks to offset the alarming threat of construction and brick companies that are destroying vast green areas in Lima.

A group to defend the environment and the inviolability of areas in the Rimac, Chio and Lurin Valleys was created the weekend of 29 July. In Lima only, there are 11,000 hectares of agricultural land that have become the single source of income for 9,000 peasant families. These families now see their livelihood threatened by construction and brick companies that keep destroying Lima's green areas, the lungs of the capital city, daily.

[Begin first unidentified man recording] Prosecutor (Ladoc) came here and confirmed that the peasants are working the land. As you see, it is a very productive land, and the peasants are involved in their activities. We urge the government to give special attention to peasants, not only in Calana but in the three valleys. We also urge it to suspend and dismiss the trials, because former owners, construction companies, and certain land swindlers are using groundless legal arguments to go ahead and lay the foundations of their construction projects. [end recording]

There are legal provisions that stipulate prison terms for people who engage in deforestation, but so far no one has been punished. It is now expected that the constitutional reform on this will be more severe.

[Begin second unidentified man recording] Article 100 of the constitutional reform, which deals with agrarian legislature, states that abandoned agricultural lands will revert to the state, but complementary regulations on this article describe abandoned lands, among other characteristics, as those that are not suitable for farming purposes; therefore, we believe the constitutional framework will protect the right to a healthy environment, particularly the citizens' right to continue using these lands for farming instead of other purposes. [end recording]



## RUSSIA

### Environmentalist Cited on Mayak Radiation Leak

PM0208093493 Moscow ROSSIYSKAYA GAZETA  
in Russian 30 Jul 93 First Edition p 3

[Report by Anatoliy Usoltsev: "And Another Leak at 'Mayak'"]

[Text] Chelyabinsk—The Chelyabinsk Oblast leadership intends to import radioactive waste for processing.

The newspapers have reported an accident at the "Mayak" production association.

"On 17 July 1993," the official report by the nuclear enterprise leadership said, "depressurization occurred at the sorption column at which plutonium-238 is purified. From the column the plutonium solution with a displacement volume of 20 liters found its way into a closed chamber lined with stainless steel. Through the ventilation system there was a discharge of 0.193 millicuries of radioactive aerosol, which represents 3 percent of the permissible daily norm. There are no casualties or damage. There is no contamination of the surrounding territory. There is no threat of any kind to the health of the inhabitants of the nearby population centers."

Vladislav Petrov, chief specialist at the Russian Ministry of Atomic Energy administration for information and public liaison, said that the event can be assessed at point one on the seven-point international scale—as an insignificant occurrence.

"The alpha-aerosol radiation discharge," the joint commission document notes, "has been localized within the production premises of the 'Mayak' production association radioisotope plant's number one shop and presents no danger to the population of the city of Chelyabinsk-65 and adjacent rayon; to the servicing personnel, or to the environment. There is no need for decontamination work outside the shop."

"No," Chelyabinsk Oblast People's Deputy Natalya Mironova, chairman of the coordination council of the movement "for nuclear safety," believes. "We must not, we do not have the right to be reassured. What is happening? The accident occurred at the installation for the purification of plutonium-238, which the 'Mayak' production association supplies to the United States under contract. The result is that we are earning money by creating and developing a dirty production facility in our own country, putting our own population and nature at risk. Guided by the provisional statute recently adopted by the oblast soviet on the import of radioactive waste onto the territory of Chelyabinsk Oblast, the oblast soviet had established a quota for the receipt and processing of 250 tonnes of nuclear fuel waste a year. Yet according to Deputy Minister N.N. Yegorov's 15 July announcement the Russian Ministry of Atomic Energy can supply

'Mayak' only 190 tonnes. Does that mean that the Chelyabinsk Oblast leadership intends to import the remaining 60 tonnes from abroad?"

Activists of the antinuclear movement believe that everyone is free to decide for himself the level of risk acceptable to him and his family. Meanwhile the country's previous leadership arbitrarily drove the chelyabinsk Oblast population into a nuclear impasse from which no real way out can be seen to this day. So why continue to aggravate the position of the Urals inhabitants?

### Correspondent Reports on Udmurtia Chemical Weapon Dumps

LD3007202893 Moscow Mayak Radio Network  
in Russian 0514 GMT 30 Jul 93

[Report from Udmurtia by correspondent Feliks Simakov]

[Text] My job today is unpleasant, but work is work. I remember how in the not-too-distant stagnation period all that my colleagues and writers said about Udmurtia was that it is a spring water region. Now people more often follow what the president said without a second thought after coming here: that it is the most militarized republic. But today we can add a third category: the republic with a chemical weapons cellar, and quite rightly, too, with nothing to add or subtract.

After the war, the powers that be gave this small republic two chemical weapon arsenals, one in the town of Kambarka, the other in the village of Kizner. The first had over 6,000 tonnes of the poisonous substance lewisite, used by the military. In the second, nothing has yet been disclosed about the amount, but it is known that it holds soman and sarin, as well as the same lewisite, not in the multitonne containers we see at Kambarka, but still as shells.

Basically, of the 40,000 tonnes of all types of poisonous substances in Russia today, Udmurtia has 11,500 tonnes. Now Russia has signed the relevant convention but has only 10 years to destroy chemical weapons.

Incidentally, at the Kambarka arsenal the chemical warfare experts give safety guarantees for this period. The organizers of a news conference in Izhevsk reminded journalists of this. Quite a few documents have now been signed relating to Udmurtia and arsenals across Russia in general, at the level of the Supreme Soviet, by the Russian president and government, and, of course, by the local authorities. The local council of ministers has even created its own convention committee [as heard] for problems relating to chemical weapons and their destruction, although only one man is working there today, and even he is only an acting representative.

General and Academician Kuntsevich's committee set about solving the problem of Kambarka's lewisite. Now he appears to have left this to deal with the purely international aspects of chemical weapons. The Ministry



of Defense is now responsible for everything, specifically its department for chemical warfare troops headed by General Petrov. Within just days his colleagues have managed to present the local authorities with a plan for building a terminal, a base where lewisite from a cistern should flow into a one-tonne container.

On the plan that we were shown there is a residential area almost next to the terminal; not very good, I'd agree. The ecologists and doctors have started complaining about the base's proximity to residential areas. But this is not the problem. Today we have no quality technology for destroying lewisite. The local population of Kambarka, insisting on their rights, say: Take it away and destroy it somewhere else. Our neighbors—Tatarstan, Bashkiriya, Kirov Oblast, and others, say: No transit across our territory!

A dead end, and practically insurmountable. There is no program for destruction, nor is there any money. Today this terminal has cost us 6 billion rubles, and could set us back twice or even three times that amount in a year. Time is passing; this is obviously a bureaucratic problem. The people live in an atmosphere of fear and protest, while the powers that be are occupied exclusively with their own problems. And today, there are no plans for the Kizner arsenal.

#### **'Ecological' Troops to Monitor Arctic Region**

*LD0308122293 Moscow Radio Rossii Network in Russian 1000 GMT 3 Aug 93*

[Text] The Archangel newspaper VOLNA reports that the Russian Federation Defense Ministry is setting up a new branch of its forces—ecological troops. Vladimir Loyter reports:

Army detachments will be asked, for the first time ever, to tackle an extremely serious task—rescuing and cleaning up the environment. This is particularly acute in the northern and Arctic regions, where the military have left their imprint on land and at sea, both in and under the water.

Colonel Boris Nazarov, deputy head of the directorate for ecology and special resources, said that the first trial ecological units will be formed in 1994. They will be attached to the Moscow Military District and the Northern Fleet. The legal and financial status of these ecological military units, which will not be confined purely to army problems, is now being studied. There will be independent committees, armed with unlimited powers, to curb all environmentally destructive activities, ranging from space exploration to pulp and paper production. They will operate on a financially autonomous basis, and not just within the walls of their own department. The most important civilian projects and installations will also come within their remit.

Since exchange prices for titanium scrap of the VT11 grade, which recently cost 22,000 rubles [monetary unit only as heard] have nearly doubled, the new department

will have no financial problems. This commodity is littering the entire tundra landscape, from Mezen to the Yamal and beyond, in the form of wreckage from first stages of rockets launched from the Plesetsk cosmodrome.

#### **Accident at Nuclear Energy Facility in Urals**

*LD0308083993 Moscow ITAR-TASS in English 0818 GMT 3 Aug 93*

[By ITAR-TASS correspondent Veronika Romanenkova]

[Text] Moscow, August 3 (TASS)—A conduit of waste solution depressurised at Plant No. 22 of Mayak Amalgamation, Chelyabinsk-40, the south Urals. The accident was discovered at 11:55 local time on Monday. ITAR-TASS learned today at the Agency for Information and Public Relations of the Russian Ministry of Atomic Energy. By ten P.M. on August 2, the work to localise the contamination source and decontaminate the territory had been completed.

Experts report that waste solution with a volume of two cubic metres with a total radioactivity of about 300 millicurie escaped, polluting 100 square metres of the plant's territory. Nobody was affected. The personnel received the radiation dose within limit.

A special commission formed at the enterprise is investigating the causes of the accident.

#### **Details of Chemical Accident at Chelyabinsk Defense Plant**

*LD0608130393 Moscow Ostankino Television First Channel Network in Russian 0500 GMT 6 Aug 93*

[report by Sergey Sergeyev: From the "Novosti" newscast]

[Text] We have previously reported on the accident which occurred at the Mayak chemical combine, a major defense enterprise in Chelyabinsk Oblast, on 17 July. What are the consequences of the radiation outburst?

**Sergeyev:** The following thing happened: a container at a plutonium-238 radioisotope purifying plant lost sealing, and alpha-particle aerosol escaped through the ventilation system into the atmosphere. According to a commission's official conclusion, the overall emission amounted to 0.2 percent of the permitted annual emission. The staff was not affected by radiation, and the premises were not damaged. The accident is rated at grade one on a seven-grade international scale, that is, insignificant. Monitoring of the territory adjacent to the shop and various areas of Chelyabinsk oblast failed to show any changes in the usual radiation background. [Video of Mayak shops; equipment]

## ESTONIA

### Environmentalists Warn Against Nuclear Dump in Sillamae

WS1008105693 Tallinn ETA NEWS BULLETIN  
in English 1844 GMT 9 Aug 93

[From RAHVA HAAL, August 10, p 3]

[Text] Environment protection enthusiasts of the Ida-Viru County warn against another possible nuclear waste dump at the industrial town of Sillamae. A uranium mine was originally located near the town but it was later closed down as more profitable raw material was imported from Russia. The Ida-Viru environment protection service has approached the "Silmet" plant with an inquiry whether or not the closed mine was used for dumping nuclear waste. The mine operated in 1948 - 1960 and no accurate plans or documents are at present available.

The environmentalists warn against the plan to construct a port at Sillamae since some mine shafts may reach the sea and could be damaged during the construction. Until definite information is available, the construction should not be started, they recommend.

## KAZAKHSTAN

### Radiation Fears Years After Underground Nuclear Explosions

LD0608112593 Moscow ITAR-TASS in English  
1025 GMT 6 Aug 93

[By ITAR-TASS correspondent Gennadiy Kulagin]

[Text] Almaty August 6 TASS—Kazakhstan is worried by the radiation situation in the republic years after a series of underground nuclear explosions were carried out in some regions "for purposes of studying the possibility of using atomic energy in the interests of the national economy," as the press reported later.

Underground water resources in the areas where such tests were carried out are now in serious danger of pollution from products of fission of strontium-90 and cesium-137, according to specialists of the republic's Ministry for Ecology and Biological Resources cited by the newspaper KAZAKHSTANSKAYA PRAVDA in today's issue.

### Almaty Threatened by Liquid Wastes Reservoir

LD2508102193 Almaty Kazakh Radio Network  
in Kazakh 2300 GMT 24 Aug 93

[Summary] Almaty is threatened with an overflow of the Sor-Bulak liquid wastes reservoir if urgent measures are not taken. At a meeting in the House of Democracy in Almaty, representatives of the Nature [Tabigat] Ecological Union of associations and enterprises of Kazakhstan, different parties, and public organizations and

movements called for a series of purification ponds to be built. They think this would be much cheaper and less harmful than the project suggested by the government. The participants in the meeting categorically opposed the idea of building a canal to discharge the waste liquids from Sor-Bulak to the Ily River, because this project would be hazardous for the population of Kurtinskiy and Balkhash rayons. It was decided to send the alternative projects to the government and independent foreign experts for examination.

## UKRAINE

### Ministries Admit Radioactive Contamination of Territory

AU1008110093 Kiev HOLOS UKRAYINY in Ukrainian  
7 Aug 93 p 6

[Unattributed report: "Let Us Maintain Calm"]

[Text] Ukraine's Ministry of Environmental Protection and Ukraine's Ministry of Nature State Administration for Kiev Oblast held a news conference that dealt with the ecological and radiological consequences of the flooding in the Uzh and Prypyat Rivers, and also in the Kiev water reservoir, which is known to have become the main accumulation of radionuclides. As a result of the fact that rivers burst their banks and water overflowed the reservoir, the radiological situation in the region has deteriorated. However, despite the fact that the environment did "become richer" in strontium, cesium, and other substances that are dangerous for the human organism, the journalists and, therefore, all citizens of Ukraine were reassured: There is nothing terrible about this. As Karlson [Who Lives on the Roof—a fairy tale] liked to say: "Calm and once more calm!"

### Chernobyl Radiation Situation Worsens Due To Floods

LD0908164693 Kiev Radio Ukraine World Service  
in Ukrainian 1500 GMT 9 Aug 93

[Text] At Ukraine's "MinChernobyl" [Ministry for the Protection of Population from the Aftermath of the Chernobyl Nuclear Electric Power Station Accident], an interdepartmental commission has held a session. It considered issues of the radiation situation changing in connection with the flood, and with ground water rising in Volhynia, Zhitomir, and Rovno oblasts. It dealt with changes in and forecasting the radiation and hygienic condition of the areas which had suffered as result of the Chernobyl disaster.

"MinChernobyl's" press service reported that the situation on the Pripyat River and its tributaries, and the Kiev reservoir today somewhat deteriorated in connection with the efflux of radioactive substances from the areas which had been affected by the flood. In particular, the concentration of Strontium in the area of the Kiev water intake on the Dnieper River amounts to nine

(?picocurie) per one liter of water. However, these levels are not higher than those in the period of the spring floods this and last year.

To monitor the situation, a headquarters has been set up attached to "MinChernobyl," and specialist working groups formed dealing with forecasting and researching changes in the radiation situation in the water, ground, and agricultural produce on the contaminated areas.

#### **Ecological Situation in Kiev Remains 'Harsh'**

WS0508074793 Kiev RADA in Ukrainian 29 Jul 93 p 2

[Report by UNIAN correspondent Mykola Khriyenko: "Kiev Is Among Ten Most Unhappy Cities in Ukraine"]

[Text] According to the environment pollution level, Kiev with its 2.8 million inhabitants is among the 10 most unhappy cities in Ukraine.

The main sources of the harsh ecological situation are, as in the past, industrial enterprises, which are not interested in environment protection activities. They are concerned only with production volume, profit, productivity, and net costs... It has been estimated that during the last year, Kiev's enterprises emitted 559,200 tonnes of harmful substances, only 5,300 tonnes less than in 1991. Auto transport pollution amounted to 120,000 tonnes. You can also add the Lybid River contamination and the devastation of the environment in the vicinity of Kiev caused by unorganized storage at dumps, sand pits, and quarries. Utility and construction waste also reaches astronomical proportions. After all, you cannot forget the radioactive contamination left after the Chernobyl nuclear power plant disaster. There are still places in the city where radioactive spots have been located with huge amounts of active cesium, plutonium, and strontium.

In such ecological circumstances, you should not be surprised that the birth rate in Kiev is falling and it is almost equal to the death rate. Of course, there are many reasons for that, but along with the deteriorating social protection standards, the ecological situation is one of the primary causes. The results of the Ukrainian Ministry of Health Hygiene Center research confirm this. In practically all the examined districts of the capital, increased morbidity, especially from cancer, was discovered. Cases of endocrin system disease, allergies, and lung disease are growing. The high level of environmental pollution also considerably impairs the functioning organisms and their immunological systems. After the Chernobyl disaster, the health condition of the growing population became particularly alarming. The morbidity rate among the Kiev children swelled 1.3-2.2 times over the last 10 years, which poses a threat to the capital's human resources.

Health care workers and ecologists pledge to improve the harsh situation in Kiev. However, without the help of political, economic, and legal authorities, those pledges remain useless.

## **WEST EUROPE**

### **REGIONAL AFFAIRS**

#### **EUREKA Environmental Projects Summarized**

BR3007144993 Paris LA RECHERCHE  
(EUREKA—L'INNOVATION AU QUOTIDIEN  
SUPPLEMENT) in French Jul-Aug 93 pp 12-14

[Third in a series of seven unattributed articles on the European EUREKA technology program compiled by the French EUREKA Secretariat: "Waste/Clean Energy—Reclaiming the Environment"]

[Text] Environmental protection has deservedly become a major issue in developed countries. Topics such as air and water pollution control, waste processing, and the preservation of the ozone layer are a highly charged topic and all levels of government are being lobbied about them by increasingly concerned citizens. Everyone is in search of the "cleanest" forms of energy. People are wary of risk-ridden nuclear power and fight to preserve green areas or to avoid oil spills. Like politicians, scientists and businesses cannot afford to overlook such concerns. As part of EUREKA, a growing number of them have started to build an environmental industry which promises a better, pollution-free everyday life.

Who is to pay for the cost of purifying air and water? The community or the individual consumer? A sharing of obligations has finally prevailed, but the debate is not over: European consumers remain oblivious to the fact that part of a product's price will go toward the costs of processing the contaminations and waste generated by the product.

This economic uncertainty probably explains why the private sector still shows comparatively little interest for environmental EUREKA projects. Participants in the 117 projects approved before the French presidency were mostly research centers. Fortunately, new projects evidence a stronger private sector presence in all aspects of environmental technology: pollution modeling and control, polluting emission control, waste recycling, and "clean" manufacturing technologies.

Waste processing, the unavoidable consequence of industrial development and growing household consumption, has become a major environmental headache. The challenge stems from the multifariousness of sources of waste: households, farming, industry. Moreover, there are many types of waste, with many different kinds of risks. The issue of waste is often mentioned by industry as being of strategic importance for the future of industrial Europe. Even despite scarce government incentives and uncertain profit expectations, they are willing to enter this field. In the past year, more than 20 new projects were added to the existing 21. Together, they are already worth more than the older ones, and the involvement of participating businesses is total, a major departure from the previous norm.

It would be a mistake to leave the sorting of household waste exclusively to the consumer. Such a solution can only bring temporary relief while technical solutions are being worked on in order to develop a veritable sorting machine, which is not a utopian vision if technicians are to be believed. The INTEC project has been combining existing technologies and developing new ones in order to come up with a novel and efficient waste sorting and processing system. INTEC is a joint project of CGE (French Water Company), Solvay (Belgium), Kruger Systems (Denmark), Bezner (Germany), Allied Colloid and Yorkshire Water (United Kingdom), and Pierolisi (Italy). All disciplines will work together in order to develop a system that must initially be able to reduce the volume of waste, and then to separate the non-recyclable part and convey the balance to a processing unit making use of "clean" processes based on physico-chemical or biotechnological technologies. Unprocessed waste will be incinerated, with full fume purification as well as stabilization and safe storage of final residues, with a view to achieving near-zero pollution levels. The project makes use of advanced technologies such as nuclear magnetic resonance spectroscopy for waste characterization, autonomous robots for sorting, and an expert system for decision-making assistance with a view to processing optimization. This requires the development of measurement tools able to continuously check the emission toxicity of various waste products and to model their environmental impact throughout the processing cycle.

One of the biggest challenges in waste processing is that it inevitably leads to the generation of new waste, which must obviously be treated, too. There is a risk of entering a vicious circle, which must be broken. To do this, it is essential that final—often liquid—residues be taken into account from the outset. One of the first EUREKA projects, called MEMBRANE, was jointly conducted by France's Lyonnaise des Eaux-Dumez and Denmark's De Danske Sukkerfabrikker; it led to the development of an ultrafiltration process: a kind of sophisticated sieve through which water flows, leaving behind particles larger than 0.01 micron. The project was a success: Today, the Douchy plant (France) turns out 50 cubic meters of potable water every hour. The Lyonnaise des Eaux has been involved in another project, STEP 2000, which uses enzymes to treat residual sludge from sewerage plants in order to reclaim usable substances and to reduce the volume of final residues.

## FRANCE

### Antipollution Investments By Industry Analyzed

BR2508134793 Paris INDUSTRIES (LE 4 PAGES SUPPLEMENT) in French Jul-Aug 93 pp 1-4

[Article by Robert Quivaux and Philippe Sabot: "Antipollution Investments by Industry"]

[Text] At 6 billion French francs [Fr], antipollution investments by industry and the energy sector represented almost 3 percent of total industrial investment in 1991.

Around one-half of specific antipollution investments are aimed at combating water pollution. The chemicals sector accounts for one quarter of all antipollution investments. Lastly, antipollution efforts by businesses are concentrated on a limited number of sites. The 100 largest companies in terms of investment account for two-thirds of the money invested in environmental protection.

Environmental protection has become a concern for all of society. Industry, too, has become aware of the problem, and now environmental protection is part of the brand image of certain industrial companies: It has even become a selling point. This awareness, together with the pressure exerted by society and stricter legal regulations, have led industrial companies to invest in cleaner technologies or in antipollution facilities. The nature of these investments has been made relatively clear for the first time thanks to a survey carried out among 7,000 energy and industrial companies (see box).

[Box]

### Exemplary Survey on Antipollution Investments

Initially launched in April 1992, this new survey—which will serve as an example at the European level—only covers antipollution investments made in 1991 and does not include current antipollution spending. It refers to production companies in the manufacturing industries (including agro-food industries) and for production or storage companies in the energy sector. The amounts in the "water production and treatment" sectors, which are included in the survey, are limited to investments linked to the collection and treatment of waste water. Their relatively small size is due to the fact that waste water treatment plants are often the property of local authorities and are therefore not covered by surveys of industrial companies.

The survey is exhaustive for companies above a certain size. The cut-off point was determined on the basis of the concentration and polluting nature of the company's activity. Generally speaking, the cut-off point was set at 100 employees, but this limit was sometimes lowered to 50, or even 20 employees.

Around 7,700 companies were surveyed. The response rate of 86 percent was satisfactory, as this is higher than the rate obtained for similar surveys performed in other countries. The results presented here are neither estimates nor have they been adjusted. Questionnaires from companies that did not respond have not been taken into account.

Antipollution investments can be broken down according to the two following cross-linked criteria:

—The area of protection: water, air, waste, noise;

—The type of investment: first, specific investments, whether treatment, recycling, or the measurement of pollutant waste; second, investments in risk prevention;



and third, investments in processes changes aimed at introducing "clean technologies" which are less damaging to the environment.

In the third type of investment, businesses sometimes find it difficult to isolate the proportion of the antipollution investment. Therefore, the results concerning this category of investment are less reliable.

[End box]

#### **Around Three Percent of Industrial Investments Concentrated on Environmental Protection**

In 1991, 40 percent of companies invested in environmental protection. These investments totaled almost Fr6 billion and represented 2.8 percent of total industrial investments, including energy. In the Netherlands, the proportion was 3.9 percent in 1989, and in Germany it was 5.9 percent in 1990, in other words almost double the antipollution investment made by French industry in 1991. However, the pressure exerted by German society to protect the environment is much greater than in France. To a large extent, this can be explained by the power of its industry (twice the size of French industry), and by its structure (importance of chemicals, thermal stations, etc.)—as well as by the total population of some 60 million spread over 250,000 square km in West Germany (550,000 square km for France). Moreover, in 1990, German industry was still in full growth, with a 5-percent rise in production that put additional pressure on the environment.

According to the estimates distributed by the BIPE [Office of European Economic Information and Forecasts] and published by the Ministry of the Environment, antipollution investments by French companies represented 2.9 percent of their total investments in 1988, compared with 7.7 percent in Germany and 3.4 percent in the Netherlands, but only 1.3 percent in the United Kingdom, and barely 0.3 percent in Italy. Making international comparisons is a delicate task since the methodologies used to collect information may differ sharply. These estimates would seem to indicate that the French level of investment approaches the estimate for the EC as a whole (3 percent).

#### **Clean Technologies or End-of-Cycle Pollution Treatment**

Antipollution investments differ from each other in the way they are implemented. The first method is risk prevention, in other words to prevent—or at least limit—accidental pollution (for example pollution resulting from a fire). Almost Fr740 million, or less than 12 percent of the total, were earmarked for this type of investment in 1991. In addition, this type of investment is relatively inexpensive: accounting for around Fr800,000 on average per investing company, compared with almost Fr2.4 million on average for all antipollution investments.

A second category of investment consists of making changes in production processes. Such investments totaled Fr1.8 billion in 1991, or 30 percent of the total. This involves renewing production equipment and adopting a new manufacturing process that is more respectful of the environment. Compared with the conventional technologies that treat pollution at the end of the production cycle, all new processes have a more certain effect on the environment since they reduce pollution at source. Here, however, environmental protection is just one of many reasons, and may not be the main reason for the investment, except for very large companies which are concerned about their brand image. Generally speaking, economic logic will only encourage the company to invest in a "cleaner" process if the old process is technically or economically obsolete. In 1991, almost 850 companies invested in new processes, with an average cost per company of more than Fr2 million.

A third major category consists of specific antipollution investments, with Fr3.4 billion invested. If the production line is not obsolete, it is more economical for companies to invest in equipment used at the end of the production cycle, such as filters, scrubbers, or purification stations. In the event of breakdown, this tried and tested equipment does not interfere in the production process. In addition, they allow companies to observe applicable regulations once the equipment has been acquired. In 1991, the amount invested in this type of acquisition totaled Fr2.5 billion and represented almost three-quarters of specific antipollution investments.

Other specific investments, such as the purchase of equipment for recycling pollutants (without renewing the production facilities), were four times less than end-of-cycle investments (just over Fr600 million, or 18 percent of total specific antipollution investments). As is the case for changes in the production process, this equipment can be described as clean technology because it reduces pollution at source. Generally speaking, it is no more costly than purifying equipment (average cost per investing company is basically the same: Fr1.4 million). Investments in recycling equipment only concern a relatively limited number of companies (fewer than 400), while almost 1,300 (or 60 percent of the total number of investing companies) have equipped themselves with purification equipment or have renewed this equipment. As it is more closely linked to the production process, recycling equipment has limited expansion potential due to technical obstacles and difficulties in marketing the by-products.

Lastly, investments in waste measuring and inspection facilities represent just Fr266 million, or less than 8 percent of specific investments.

#### **Water: The Main Area of Protection**

Specific antipollution investments can be broken down in accordance with the environments or areas affected by pollution requiring treatment: water, air, waste, noise. More

than half (52 percent) of the Fr3.4 billion worth of specific investments is aimed at combating water pollution. This is followed by air (33 percent), waste (11 percent), and noise (4 percent). Together, air and water account for 85 percent revealed by the low-water readings observed following the 1990 drought. Investments made by industry in 1991 with the help of the water agencies and investments planned for coming years should allow for the situation in this area to be improved.

Unlike the situation for water, the relatively low importance of fossil fuel power stations together with energy savings in previous years both play a role in the drop in French investments in the air sector. Indeed, during the eighties, sectors such as cement works, the paper/cardboard industry, and the glass industry invested in more economical fossil fuel equipment. They and others (steel processing, chemicals, paper/cardboard) were fitted out with natural gas installations, which offer greater energy output.

As for industrial waste, approximately 50 percent is treated outside the plant, and storage still represents a large proportion of its in-house treatment. This explains the relatively modest investments devoted to waste. However, pollutants that affect air and water quality can only be treated at the site where they are produced.

#### **Investments Largest in Chemicals, Energy, and Paper/Cardboard Sectors**

On the whole, the largest polluters in 1991 were also the biggest investors: the chemicals sector, refineries, paper/cardboard sector, and—to a lesser extent—the steel and nonferrous metals sector. The amounts invested by the chemicals sector alone (basic chemicals, paracheicals, pharmaceuticals) totaled almost Fr1.5 billion, or one-quarter of industrial investments in environmental protection. Compared with the total investment in the sector, the investment made by the basic chemicals branch (9 percent) is, nevertheless, not as great as that made by the steel sector (13 percent). Of the total investment, the proportion of antipollution investments is 8 percent in the smelting sector and the paper/cardboard sector, and 6 percent in the refining sector. In 1990, antipollution investments in the German chemicals industry (insofar as the content of the two surveys is comparable) was 15 percent of the total investment in the sector, compared with 11 percent in the paper/cardboard industry, and 8 percent in the steel sector. Overall, antipollution investments in the German manufacturing industry (excluding energy and mining) in 1990 were 5.2 percent of total investments, compared with 3 percent in France in 1991 (excluding energy).

Antipollution investments in the energy sector overall represent almost 16 percent of the total, compared with 26 percent in Germany in 1990, not counting coal mines. In France, compared with the total investment, the level

of antipollution investments by the energy sector is lower than the industrial average (1.8 percent, compared with 2.7 percent). By way of comparison, investments by its German counterpart (9.6 percent for the energy sector and 14.9 percent for the mining sector in 1990) are justified by the importance of conventional thermal stations and active coal mines.

The breakdown of investments according to sectors of activity varies depending on the area of protection and nature of the investment. With regard to water protection, in addition to paper/cardboard (14 percent of the total), there are also the water production/distribution sector (which treats the pollution caused by others, 9 percent) and the agro-food industries (almost 15 percent). For air-related measures, the chemicals sector makes more than 30 percent of the investments, refineries more than 13 percent, and steel more than 13 percent. Nonferrous metals (which account for 28 percent of the total) and paper/cardboard (18 percent) invest in waste treatment. In the antinoise pollution sector, there are metalworking (5 percent) and the automotive sector (9 percent). Both of these sectors use drawing presses.

#### **Technically and Geographically Concentrated Investments**

Investments by the top 50 companies ranked according to the amount of their antipollution investments represent more than 40 percent of the total invested by industry (excluding agricultural and agro-food industries); the top 100 companies represent two-thirds.

Technical concentration and geographical concentration are closely linked. Around 80 percent of antipollution investments by industry as a whole (including agro-food) are made in 10 regions: Nord-Pas-de-Calais (13 percent); Haute-Normandie (12 percent); Rhone-Alpes (11 percent); Provence-Cote d'Azur (10 percent); Ile-de-France (9 percent); Lorraine (8 percent); Alsace (5 percent); Aquitaine (5 percent); Midi-Pyrenees (4 percent); and Picardie (4 percent). These 10 regions are those in which the consumption of energy by industry is concentrated—and in the same proportion. A large number of companies located in these regions are located in industrial areas such as Basse Seine in Haute Normandie, the chemicals corridor and the Savoie valleys in Rhone-Alpes, or the lake shores of Berre in Provence-Cote d'Azur.

There is a link between the manufacturing processes used by many industries located in these regions and areas (chemicals, metallurgy, paper/cardboard, etc.) and the high consumption of fossil fuels and polluting emissions. Indeed, these processes involve major physical and chemical transformations of the materials used, thus producing solid, liquid, and gaseous waste. Lastly, the burning of fossil fuels (which are often necessary for the above-mentioned transformations) cause atmospheric pollutants such as dusts and sulfur dioxide (SO<sub>2</sub>).

[Figures to graphic 1, p 1]



**Three Major Categories of Antipollution Investments by Industry: Size of Specific Investments**

Process Changes: 30.3 percent (Fr1.8 billion)

Risk Prevention: 12.4 percent (Fr0.7 billion)

Specific Investments: 57.3 percent (Fr3.4 billion)

[Graphic 2, p 1: approximate figures derived from bar chart]

**Specific Antipollution Investments in 1991: Preponderance of End-of-Cycle Purification**

Water measurement: Fr110 million

Water recycling: Fr240 million

Water purification: Fr1,450 million

Air measurement: Fr70 million

Air recycling: Fr200 million

Air purification: Fr830 million

Waste measurement: Fr40 million

Waste recycling: Fr180 million

Waste purification: Fr180 million

Noise measurement: Fr60 million

Noise purification: Fr40 million

[Figures to graphic 3, p 3]

**Structure of Industrial Antipollution Investments in France**

Energy: 15.8 percent

Chemicals: 24.8 percent

Steel and non-ferrous metals: 14.5 percent

Smelting, metalworking, mechanics: 6.8 percent

Transport equipment: 4.5 percent

Paper/cardboard: 11 percent

Agro-food industries: 10.5 percent

Other industries: 12.1 percent

[Figures to graphic 4, p 3]

**Structure of Industrial Antipollution Investments in Germany**

Energy: 29 percent

Chemicals: 25.7 percent

Steel and non-ferrous metals: 5.6 percent

Smelting, metalworking, mechanics: 7.3 percent

Transport equipment: 7.4 percent

Paper/Cardboard: 3.8 percent

Agricultural and foodstuffs industries: 3.8 percent

Other industries: 17.4 percent

**Antipollution Investments by Industrial Sector in 1991 (in millions of French francs)**

	Recycling	Purification
Energy	18	351
Refining	4	90
Steel	18	308
Initial steel transformation	2	16
Extraction of non-ferrous metals	4	55
Minerals, construction material, glass	21	113
Basic Chemicals	130	453
Chemicals (other)	54	84
Metalworking	10	115
Smelting	7	45
Mechanics	10	36
Electrical or electronic construction	10	94
Automotive, other transport equipment	29	92
Agro-food industries	154	264
Textile and leather	10	59
Wood and furniture	15	14
Paper/cardboard	121	296
Other industries	9	28
Total	626	2,513

	Total Specific Investments	Process Changes	Risk Prevention	Total Environment Investment	Environment/Total Investment
Energy	426	33	50	509	1.8%
Refining	114	285	31	430	5.8%
Steel	331	119	17	467	10.9
Initial steel transform.	19	15	5	38	12.7%
Non-ferrous metal extraction	69	278	23	371	3.7%
Minerals, constr. material, glass	147	79	21	247	3.1%
Basic chemicals	631	261	314	1,205	6.5%
Chemicals (other)	151	61	57	270	9.1%
Metalworking	141	31	22	193	3.3%
Smelting	57	37	6	101	7.8%
Mechanics	52	48	10	110	1.2%
Electric, electronic constr.	114	44	63	221	1.1%
Automotive, other transp. equipm.	132	92	45	269	0.9%
Agro-food industries	438	165	22	625	2.8%
Textile and leather	78	22	3	103	2.8%
Wood and furniture	31	13	2	47	1.6%
Paper/cardboard	432	185	36	653	8.2%
Other industries	41	31	8	81	1.3%
Total	3,404	1,798	736	5,939	2.8%

Sources: SESSI, SCEES [expansions not given]

## GERMANY

### Environmental Group Opposes Czech, Slovak Nuclear Deal

AU0608183293 Frankfurt/Main FRANKFURTER RUNDSCHAU in German 6 Aug 93 p 4

["ges" report: "Nuclear Companies on Course to the East"]

[Text] Bonn, 5 August—According to the Federation for Environment and Nature Protection in Germany (BUND), German electricity producers Veba and Bayernwerk and the power station builder Siemens want to participate in the expansion of "outdated and unsafe nuclear power plants in the Czech Republic and the Slovak Republic. Planned are linked deals: The Czech Republic and the Slovak Republic are to deliver cheap electricity, and in return the German companies will finance the expansion and completion of nuclear reactors in the Czech plant in Temelin and the Slovak plant in Mochovce. Ludwig Trautmann-Popp, BUND's energy expert, stated in Bonn on Thursday [5 August] that the plans are irresponsible.

Veba, Bayernwerk, Siemens, and the French energy corporation EDF have applied to the European Reconstruction Bank in London for a loan of more than 1.3 billion German marks for the completion of two reactors in Mochovce. In addition, Bayernwerk AG wants to participate directly in the nuclear power station and has already concluded contracts about the supply of 500 megawatts per year with the Slovak energy company SEP. Furthermore, the Bavarian electricity monopolist is striving for participating in the Czech energy company CEZ.

The nuclear reactors in both countries are outdated and constitute an acute safety risk, Trautmann-Popp stated. In Mochovce, four reactors of the Greifswald type and in Temelin two reactors of the Stendal type are under construction. These Russian-type reactors were closed down in eastern Germany after unification because of safety problems. According to an expert report by FRG Environment Minister Klaus Toepfer, they would not have any chance of being approved in Germany even if they were reequipped. The World Bank, too, has warned against continuing construction.

For the German energy companies the expansion to the East is a profitable business: According to Trautmann-Popp, they pay about four pfennigs per kilowatt hour from Czech or Slovak reactors; the same from German installations, on the other hand, costs 16 to 20 pfennigs.

## ITALY

**New System Treats, Recycles Industrial Waste***BR0908093293 Rome ANSA in Italian 0128 GMT**5 Jul 93*

[As released by ANSASERVICE Database]

[Text] Rome, 5 Jul (ANSA)—Dangerous industrial waste can lose its harmful toxic "effect." A new patent is in fact able to render these residues harmless. According to the environment minister, this waste totalled 3 million tonnes in Italy in 1991. The system is called Atoxin and consists of a technology which, as the inventor of the system the architect Fabrizio Rigelli stated: "Permits the dangerous aspect of industrial waste, and even of the ashes resulting

from solid urban waste, to be completely eliminated." The Atoxin process was presented to the Roca 79 company which adopted this "toxic-blocking" process of industrial waste. By rendering industrial waste safe, and at Roca 79 they ensure that this is 100 percent the case, the resulting harmless material can be used to obtain building materials for the construction industry and for road works, bricks, blocks, pipelines, slabs or conglomerates for roadbeds and fillings. "The dump," they say at Roca 79, "which was always considered to be a necessary evil that nobody wanted, now becomes an authentic recycling industry in full respect of the environment and environmental laws." As stated at Roca 79, the Atoxin process "has received ENEA [Agency for New Technologies, Energy, and the Environment] certification after a 13-month reviewing period."

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23 SEPT 1993